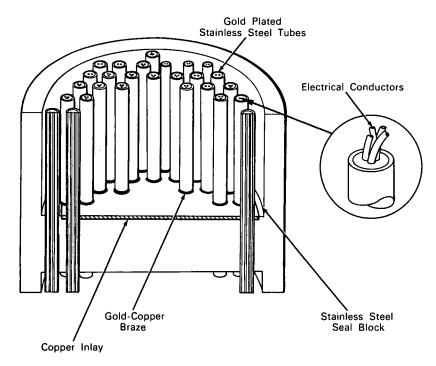
NASA TECH BRIEF



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Coating Method Enables Low-Temperature Brazing of Stainless Steel



The problem: To braze stainless steel tubes, containing insulated electrical conductors, to a stainless steel sealing block. The braze must be made at a temperature that will not damage the conductors but must provide an effective seal against gaseous or liquid helium under pressure.

The solution: One stainless steel surface is coated with gold, the other with copper, and the braze is accomplished with a gold-copper (phosphorous) eutectic.

How it's done: The sealing block is prepared as a copper-stainless steel composite by pressure inlaying of copper in the seal area. Holes are bored to accommodate the tubes, a very thin gold plate is applied to

each tube and the tubes are inserted in the block. The Ag-Cu eutectic is placed in position and a small induction furnace is slipped over the completed assembly. An inert gas is introduced to prevent oxidation, and a 10-kc/s frequency is used to effect the braze.

Notes:

- 1. The 10-kc/s frequency is used instead of the normal 440 kc/s to assure simultaneous brazing of the inner and outer joints.
- 2. This technique provides a highly effective seal without the use of flux and without damage to the electrical conductors inside the tube.

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